

AMENDMENTS TO THE CLAIMS

1. (Original) A rheology-modifiable polymeric composition comprising:
 - (a) a free-radical degradable polymer,
 - (b) a free-radical inducing species, and
 - (c) a free radical trapping species having at least two trapping sites,wherein
 - (A1) the free radical trapping species (i) substantially suppresses degradation of the polymer in the presence of the free-radical inducing species and (ii) at a trapping site, being graftable onto the polymer after the polymer forms a free radical, and
 - (A2) the rheology-modifiable polymeric composition yields a rheology-modified polymer being melt processable.
2. (Original) The rheology-modifiable polymeric composition of Claim 1 wherein the degradation occurs by chain scission.
3. (Original) The rheology-modifiable polymeric composition of Claim 1 wherein the polymer being halogenated and the degradation occurs by dehydrohalogenation.
4. (Original) The rheology-modifiable polymeric composition of Claim 1 wherein the resulting rheology-modified polymer being branched.
5. (Original) The rheology-modifiable polymeric composition of Claim 4 wherein the branching of the rheology-modified polymer being demonstrable by a Mark-Houwink plot.
6. (Original) The rheology-modifiable polymeric composition of Claim 1 wherein the resulting rheology-modified polymer having a gel content as measured by xylene extraction (ASTM 2765) of less than about 10 weight percent.
7. (Original) The rheology-modifiable polymeric composition of Claim 1 wherein the resulting rheology-modified polymer having a gel content as measured by xylene extraction

(ASTM 2765) of less than about an absolute 5 weight percent greater than the gel content of the base polymer.

8. (Original) The rheology-modifiable polymeric composition of Claim 1 wherein the polymer is selected from the group consisting of butyl rubber, polyacrylate rubber, polyisobutene, propylene homopolymers, propylene copolymers, styrene/ butadiene/ styrene block copolymers, styrene/ ethylene/ butadiene/ styrene copolymers, polymers of vinyl aromatic monomers, vinyl chloride polymers, and blends thereof.

9. (Original) The rheology-modifiable polymeric composition of Claim 1 wherein the free-radical inducing species being an organic peroxide, Azo free radical initiator, bicumene, oxygen, and air.

10. (Original) The rheology-modifiable polymeric composition of Claim 1 wherein the free radical trapping species being a hindered amine-derived free radical trapping species.

11. (Original) The rheology-modifiable polymeric composition of Claim 10 wherein the hindered amine-derived free radical trapping species being selected from the group consisting of multi-functional molecules having at least two functional groups of 2,2,6,6,-tetramethyl piperidinyloxy and derivatives thereof.

12. (Original) The rheology-modifiable polymeric composition of Claim 11 wherein the hindered amine-derived free radical trapping species having at least two nitroxyl groups derived from oxo-TEMPO, hydroxy-TEMPO, esters of hydroxy-TEMPO, polymer-bound TEMPO, PROXYL, DOXYL, di-tertiary butyl N oxyl, dimethyl diphenylpyrrolidine-1-oxyl, 4 phosphonoxy TEMPO, or metal complexes with TEMPO.

13. (Canceled)

14. (Original) A rheology-modifiable polymeric composition comprising:

(a) a free-radical degradable polymer and

- (b) a free-radical inducing species, and
- (c) a free radical trapping species graftable via a free-radical-initiated carbon-FRTS-carbon coupling bond to the polymer,

wherein the resulting rheology-modified polymer having a

$$\text{Maximum Torque} < 1.30 * \text{Minimum Torque}$$

measured by a moving die rheometer at the polymer's coupling temperature, a frequency of 100 cycles per minute, and an arc of 0.5 degrees.

15. (Original) A rheology-modifiable polymeric composition comprising:

- (a) a free-radical carbon-carbon crosslinkable polymer,
- (b) a free-radical inducing species, and
- (c) a free radical trapping species having at least two trapping sites,

wherein

(A1) the free radical trapping species (i) substantially suppresses carbon-carbon crosslinking of the polymer in the presence of the free-radical inducing species and (ii) at a trapping site, being graftable onto the first polymer after the first polymer forms a free radical, and

(A2) the rheology-modifiable polymeric composition yields a rheology-modified polymer being melt processable.

16. (Original) The rheology-modifiable polymeric composition of Claim 15 wherein the resulting rheology-modified polymer being branched.

17. (Original) The rheology-modifiable polymeric composition of Claim 16 wherein the branching of the rheology-modified polymer being demonstrable by a Mark-Houwink plot.

18. (Original) The rheology-modifiable polymeric composition of Claim 15 wherein the resulting rheology-modified polymer having a gel content as measured by xylene extraction (ASTM 2765) of less than about 10 weight percent.

19. (Original) The rheology-modifiable polymeric composition of Claim 15 wherein the resulting rheology-modified polymer having a gel content as measured by xylene extraction

(ASTM 2765) of less than about an absolute 5 weight percent greater than the gel content of the base polymer.

20. (Original) The rheology-modifiable polymeric composition of Claim 15 wherein the polymer is selected from the group consisting of acrylonitrile butadiene styrene rubber, chloroprene rubber, chlorosulfonated polyethylene rubber, ethylene/alpha-olefin copolymers, ethylene/diene copolymer, ethylene homopolymers, ethylene/propylene/diene monomers, ethylene/propylene rubbers, ethylene/styrene interpolymers, ethylene/unsaturated ester copolymers, fluoropolymers, halogenated polyethylenes, hydrogenated nitrile butadiene rubber, natural rubber, nitrile rubber, polybutadiene rubber, silicone rubber, styrene/butadiene rubber, styrene/ butadiene/ styrene block copolymers, styrene/ ethylene/ butadiene/ styrene copolymers, and blends thereof.

21. (Canceled)

22. (Original) A rheology-modifiable polymeric composition comprising:

- (a) a free-radical carbon-carbon crosslinkable polymer and
- (b) a free-radical inducing species, and
- (c) a free radical trapping species graftable via a free-radical-initiated carbon-FRTS-carbon coupling bond to the polymer,

wherein the resulting rheology-modified polymer having a

$$\text{Maximum Torque} < 1.30 * \text{Minimum Torque}$$

measured by a moving die rheometer at the polymer's coupling temperature, a frequency of 100 cycles per minute, and an arc of 0.5 degrees.

Claims 23-35 (Canceled)